

REMARKS

Claims 1-24 are pending in the subject patent application. Claims 1, 11, 21 and 22-24 are the independent claims. Base Claim 22 is the independent form of Claim 6. Base Claim 23 is the independent form of Claim 16.

Applicants acknowledge the allowable subject matter indicated for Claims 6 and 16 the allowance of Claims 22-24. Base Claims 1, 11 and 21 have now been amended to recite the claim limitations of "the global behavior being at least in regions of sparse initial input" for clarity. Support for these claim amendments can be found at least on Specification page 15, lines 20-26 as originally filed. No new matter is introduced. Acceptance is respectfully requested.

The present invention as described in the subject application and recited in the pending claims is directed toward creating a non-linear empirical model that has a constrained global behavior. The constrained behavior of the model derivative is guaranteed across the entire input domain of the model. The constrained model is created in three stages, including creating an initial model through specifying the general shape of the gain trajectory, then constructing a non-linear network model based on the initial model, and finally constraining parameters of the non-linear model based on empirical inputs to produce the constrained model. Specification page 5, lines 3-13.

Claims 1-5, 7-15 and 17-21 have been rejected under 35 U.S.C. § 102 as being anticipated by Lightbody (IEEE article, published March 21-24, 1994). In support of this rejection, the Office Action equates the gradient of cost, g , in Lightbody to the claimed "bounded derivative".

If the Lightbody gradient of cost is the claimed "bound on a derivative" then "cost" (more specifically batch cost) is the claimed "derivative". That derivative is "...a derivative of the base non-linear function" as recited in the base Claims 1, 11 and 21. In Lightbody, the analogous base non-linear function is Equation 2 on page 239. Batch cost stated in Equation 3 of Lightbody is not the derivative of Equation 2. Thus the batch cost of Lightbody cannot be analogous to the claimed "derivative" and the gradient, g , of Lightbody cannot be analogous to the claimed "bound on a derivative of the base non-linear function".

Alternatively, if the Lightbody gradient of cost is to be analogous to the claimed "derivative of the base non-linear function" (equating "gradient" and "derivative"), then batch

cost must be a base non-linear function of an initial model. However, in Lightbody, Equation 2 on page 239 sets forth a base non-linear function of an initial model (referred to as a Multilayer Perception Network). The cost for training this network is stated as batch cost Equation 3 (page 239). Thus, the Lightbody batch cost is not analogous to the claimed "base nonlinear function" of an initial model, and the gradient of cost is not analogous to the claimed "derivative of the base non-linear function".

Further, Lightbody does not imply or suggest the claimed "global behavior being at least in regions of sparse initial input" of base Claims 1, 11 and 21. In contrast, Lightbody page 238, left column under subheading "Analysis of Plant Data", sets forth that "[data] was available for all variables associated with this plant" (emphasis added). Thus Lightbody does not anticipate the claimed invention of base Claims 1, 11 and 21. Claims 2-5 and 7-10 depend from Claim 1, and Claims 12-15 and 17-20 depend from Claim 11. Thus these claims inherit the patentably distinguishing terms of base Claims 1 and 11 argued above. As such the § 102 rejection of Claims 1-5, 7-15 and 17-21 is believed to be overcome and should be withdrawn.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By Mary Lou Wakim
Mary Lou Wakimura
Registration No. 31,804
Telephone: (978) 341-0036
Facsimile: (978) 341-0136

Concord, MA 01742-9133

Dated: 4/26/06